Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)
	)
Advanced Television Systems and Their Impact on the Existing Television Broadcast Service	)
	) MM Docket No. 87-268
Review of Technical and Operational Requirements: Part 73-E, Television Broadcast Stations	)
	)
Re-evaluation of the UHF Television Channel and Distance Separation Requirements of Part 73 of the Commission's Rules	)

REPLY COMMENTS OF
THE NATIONAL CABLE TELEVISION ASSOCIATION, INC.

Wendell H. Bailey
Vice President
Science and Technology

R. Brian James
Director of Engineering
Science and Technology

Brenda L. Fox
Loretta P. Polk
1724 Massachusetts Ave., N.W.
Washington, D.C. 20036
(202)775-3664

Counsel for National Cable Television Association, Inc.

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SUMMARY

The initial comments filed in response to the Commission's Tentative Decision and Further Notice of Inquiry into Advanced Television Service establish that in many important respects the video delivery media are on the same track with regard to advanced television (ATV). Indeed, the comments set forth a blueprint for how the ATV process should proceed in the coming months-- through both objective and subjective testing of candidate systems, through consensus-building among the relevant industries and through the adoption of interface standards that promote inter-operability between alternative video distribution media. Beyond these key areas, there are many complex issues open to debate.

While the industries generally support the Commission's tentative conclusions on advanced television, they are concerned that the Commission is predisposed to decide the spectrum allocation options before sufficient data is available on the spectrum requirements and transmission capabilities of the various proponent systems. The industries strongly believe that spectrum issues are part and parcel of the selection of standards. Thus, they should not, and realistically can not, be isolated and resolved until there is adequate data and test results on which to make informed decisions. Moreover, there is no basis to proceed prematurely given the broadcast and cable industries' demonstrated commitment through the Advanced Technology Test Center and Cable Laboratories to test ATV systems as rapidly as they can obtain prototype hardware.

As the cable industry has previously made clear, its major concern in this proceeding is that the government-adopted terrestrial broadcast ATV system be capable of being effectively retransmitted by cable television systems since the majority of American homes receive broadcast programming via cable. By generally endorsing the involvement of all industries affected by the introduction of ATV and, in some instances, by specifically acknowledging the importance of cable technology in television delivery, the comments reflect a growing recognition of this fact.

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The National Cable Television Association, Inc. ("NCTA"), by its attorneys, hereby submits its reply comments on the Commission's Tentative Decision and Further Notice of Inquiry on advanced television ("ATV") systems.

The comments filed in this second round of the Commission's ongoing inquiry into advanced television service indicate that there is widespread agreement on certain issues but widely divergent views on others. And while the industries are largely supportive of the Commission's tentative conclusions, they are equally troubled by other aspects of the decision, particularly with regard to spectrum matters. In NCTA's view, the comments reflect that there has been continual progress in ATV development

over the past year, but there are still many unknowns and many uncertainties yet to be debated.

Nonetheless, at this point in the ATV process, the shared views of the relevant industries-- regarding testing, consensus-building and inter-operability-- should set the stage for meaningful analysis of the complex issues as the systems become operational. The current consensus should also facilitate the successful transition to an ATV environment for all video delivery media. In the following discussion, NCTA will highlight these areas of broad agreement and reemphasize a few points that are of particular importance to the cable industry.

DISCUSSION

First of all, it is significant that there is virtually universal agreement in the communications industry that extensive testing and evaluation of ATV systems is an integral, indeed crucial, component of the ATV standards-setting process.[1/] And while preliminary, hypothetical studies are useful to framing the issues and policy options, they are no substitute for hard data from both laboratory and field tests. Spectrum decisions made in a vacuum could lead to an unduly limited, ultimately ineffective

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1/ See e.g. Comments of NCTA, National Association of Broadcasters (NAB), Advanced Technology Test Center (ATTC), Association of Maximum Service Telecasters (MST), CBS, PBS, Advanced Television Systems Committee (ATSC), Electronic Industries Association (EIA), Institute of Electrical and Electronics Engineers (IEEE), Sony Corporation, Thomson Consumer Electronics, Time Inc., Joint Comments of Broadcasters, Center for Advanced Television Service, David Sarnoff Research Center, North American Philips Corporation, Zenith Corporation, NHK.

ATV system for the public. Moreover, the overall economic and policy questions surrounding the introduction of advanced television rest, in part, on the resolution of many of the technical issues and the outcome of comparative system analyses. Therefore, the video delivery media strongly believe that the performance claims, transmission capabilities and spectrum demands of the various candidate systems must be verified through actual hardware testing before any decisions on standards can be made.[2/]

The broadcast and cable industries' drive to conduct the necessary tests is only limited by the availability of

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2/ The broadcast industry is rightfully concerned that decisions on spectrum availability, taboo elimination, non-contiguous channel broadcasting, tuner selectivity and allotment issues await the availability of concrete data. Indeed, the cable industry appreciates that specific technical problems may arise for cable if the various broadcast spectrum options are not fully analyzed. For example, as noted in the Comments of Time Inc., additional ATV spectrum that is contiguous with the 6 MHz channel could cause television picture interference because of carrier intermodulation; on the other hand, non-contiguous ATV channel broadcasting would require reconciling the different propagation characteristics of the channels in the receiver.

In addition, if new broadcast channels are opened up for simulcasting or augmentation of ATV signals, problems could result in cable decoders/converters whose outputs are set for channels 2, 3, and 4 in order to avoid local off-air stations (whose signals might cause direct pick-up interference in the television set).

Finally, as noted in NCTA's initial comments, a wideband broadcast ATV system will severely strain cable television relay services.

hardware.[3/] In preparing for the advent of fully operating prototype systems, the Advanced Technology Test Center (ATTC) is currently refining test plans and methodologies and installing test facilities with the cooperation of various industry sectors. For example, Cable Laboratories, Inc. is actively working with ATTC in preparing to test the suitability of alternative ATV systems for cable carriage.[4/] Moreover, as indicated in its comments, the Advanced Television Systems Committee (ATSC), which is an inter-industry organization, is committed to evaluating these tests and making recommendations on standards.

In the Further Notice, the Commission concludes that it would be premature to adopt standards at this time, yet at the same time it appears predisposed to move rapidly on the spectrum issues. The industries submit that the spectrum issues and related technical matters are inextricably bound up in the selection of standards. Indeed, the quality/bandwidth and quality/cost tradeoffs that must be made depend on the existence of sufficient empirical data and test results on spectrum requirements. And given the readiness of the broadcast

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3/ Last week, NCTA's Engineering Committee began conducting field tests of the NHK Muse-E system on cable systems in Fairfax, Virginia and Annapolis, Maryland. Preliminary tests of the system had been performed on cable in October 1987 and during the 1988 NCTA convention in Los Angeles. Other than the MUSE-E system, the only system that has received even preliminary evaluation is an early prototype of the North American Philips HDS-NA system. It was tested on a demonstration cable system in the spring of 1988.

4/ See Comments of ATTC, pp. 6-7.

and cable industries to test ATV systems, there is no need to decide these issues on the basis of thin information.

The second major area of agreement among industry commenters really goes hand-in-hand with the first area-- that is, the need for subjective testing of viewer perception of the increased video resolution and other enhancements offered by ATV.[5/] Such testing is important because despite the widely-recognized technical achievements in improving television picture and sound quality, in the end the consumer will be the judge. In light of that fact, the FCC Advisory Committee created a working party on subjective assessment that is studying human perception of the improved sharpness, depth portrayal and color quality of the new ATV formats. In addition, ATTC and Cable Labs recently entered into a joint agreement to design a psychophysical test plan. Furthermore, in an effort to define ATV standards that are responsive to consumer desires, the FCC Advisory Committee recently established a working party to conduct audience research under the auspices of its Planning Subcommittee. That group will investigate such matters as the types of programs most appreciated in the high definition format and the types of viewers and the willingness of viewers to pay a premium for HDTV display. Given the comprehensive subjective testing and market-based studies that will be undertaken, the Commission should

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5/ See e.g. Comments of NCTA, Time Inc., NAB, ATTC, MST, ABC, EIA, Tele-Communications Inc., Massachusetts Institute of Technology.

refrain from taking action on ATV standards until information on consumer reaction to ATV is available for consideration.

Thirdly, the commenters generally endorse the consensus-building process embodied in the inter-industry advisory groups and technical organizations as the means to achieve ATV standards and guidelines. Thus, despite the inherent biases and differing positions brought to the table, the industries intend to work together to implement a sensible and orderly transition to ATV. There is every indication that they will continue to coordinate their independent and joint efforts through the FCC Advisory Committee (and its working parties), and through other such organizations.[6/] It would simply be counterproductive and short-sighted for the Commission not to rely on the wealth of resources and expertise that has been marshalled by the communications industry in this process.[7/]

Finally, "inter-operability" has become the watch word for the broadcast, cable, satellite, consumer electronics

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6/ See e.g. Comments of NCTA, EIA, CBS, Joint Broadcasters, Thomson Consumer Electronics, Sony Corporation, North American Philips Corporation, David Sarnoff Research Center.

7/ Despite the overriding support in the comments for a consensus on ATV standards, the Public Broadcasting Service is concerned that a de facto standard could emerge that will not be optimal for broadcasters (and hence the public interest) because of pressure to develop a system that interfaces well with cable or DBS transmission when those industries are likely to offer ATV first. It seems indisputable to us, however, that the public will be served by a broadcast standard that works well on those media, such as cable and satellites, which routinely relay broadcast signals to the home. In fact, as NCTA has noted in the past, cable is the principal means by which broadcast television programming is delivered to the public.

and other interested industries in the development of ATV standards.[8/] There is disagreement as to whether inter-operability, or compatibility between alternative video distribution media, should be accomplished through marketplace forces, through voluntary industry guidelines or through regulatory mandates, but it is consistently held that some form of cost-effective interconnection is necessary. Indeed, there is little doubt that the development of totally incompatible standards would only slow down the transition to ATV and result in public confusion and market instability.

In its comments, NCTA took the position that the common interests of the alternative video delivery media should spur the development of compatibility standards without government direction. And, in fact, techniques for accommodating different reception formats in the ATV display unit are currently being devised by inter-industry groups (e.g. the FCC Advisory Committee working party on Alternative Media Interface). Moreover, as recognized by several commenters, since nonbroadcast media (such as cable) provide relay facilities in the delivery of broadcast signals, achieving compatibility between these media is

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8/ See e.g. Comments of NAB, CBS, IEEE, EIA, Joint Broadcasters, Hughes Communications, Time Inc., General Instrument Corporation, Satellite Broadcasting and Communications Association, New York Institute of Technology, Zenith Corporation, NHK, North American Philips Corporation, Sony Corporation, Pacific Bell and Nevada Bell

particularly important.[9/]

As to the mechanism by which inter-operability should be achieved, the industries greatly favor an external type of "multi-port" interface connector device over the pure open architecture receiver approach.[10/] The multi-port concept does appear to be an efficient, practical approach to interconnecting various ATV signal formats with the receiver. However, as NCTA and many other commenters pointed out, in order for it to work effectively it requires the adoption of some minimum signal standards.[11/] Thus, a baseband component video signal that defines such parameters as the number of scan lines, the field rate and the aspect ratio would be specified for all media. Such minimal standards will have the added benefit of promoting economies of scale in ATV receiver manufacturing and production.

9/ See Comments of NCTA, Time Inc., TCI, General Instrument, North American Philips, Satellite Broadcasting and Communications Association.

10/ On the matter of inter-operability among alternative video delivery media, there seems to be, in our view, a premature condemnation of the open architecture approach to ATV by many commenters. An open architecture receiver does not necessarily mean a receiver that is capable of transcoding an almost limitless array of transmission formats nor is it necessarily a substitute for the failure to set standards. As explained by Dr. Schreiber of MIT, an open architecture receiver could be devised that is adaptable to a certain range of transmission standards. It remains to be seen however, whether this can be accomplished in a relatively simple, cost-effective manner. While we agree that the multi-port interface approach appears to be more economical and consumer-friendly, we remain open-minded to the possibility that the "smart" receiver concept could work.

11/ See Comments of EIA, Thomson Consumer Electronics, Hughes Communications, North American Philips, New York Institute of Technology.

Most importantly, interface standards will foster flexibility in the provision of ATV service and thereby allow for future improvements.

Beyond the foregoing areas of agreement, the commenters differ with respect to issues ranging from whether to compel an NTSC-compatible ATV system to whether to endorse a particular HDTV production standard. And in some instances, they completely diverge philosophically on the overall future direction of advanced television. Given the lack of technical information that is presently available, the industries cannot effectively debate and the Commission cannot realistically decide these issues.

In any event, the cable industry's major concern at this time is that the government-mandated broadcast ATV standard work effectively over the cable transmission network. We are encouraged therefore by those parties, other than cable interests, who acknowledged the importance of achieving a broadcast ATV system that enables cable to deliver high quality broadcast programming. For example, Sony Corporation's notes that "it is important to recognize that thousands of cable television systems in the U.S. transmit terrestrial broadcast television programming".[12/] North American Philips also pointed out that the "interrelationships of broadcast and cable necessitate that any ATV signal chosen for broadcasters be

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12/ Comments of Sony Corporation, p. 28.

suitable for transmission over cable".[13/] ATTC, as noted earlier, recognizes the need for ATV testing over cable by engaging in joint activities with Cable Labs. Most significantly, CBS recommended that a "single broadcast ATV transmission standard be adopted based on a consensus of affected industries."[14/] And it succinctly summarized the major thrust of what the cable industry has sought to convey:

> It is of particular importance to the broadcast and cable industry and to the public, of course, that a terrestrial ATV broadcast signal be passed by cable systems without degradation, since the number of viewers who view broadcast signals through cable retransmissions has reached 50% and continues to grow. In that regard, it is important that the cable industry bring its expertise to bear in the process of evaluating candidate terrestrial broadcast ATV transmission systems.[15/]

Thus, as recognized by a major participant in the ATV process, the adoption of a broadcast ATV standard that is compatible with cable technology will be important to cable operators, broadcasters and the public.[16/]

13/ Comments of North American Philips Corporation, p. 29.

14/ Comments of CBS, p. iii; see also Comments of CBS, pp. 11, 15 (noting importance of the "robustness" of the cable retransmitted signal).

15/ Id. at p. 42.

16/ The cable industry is committed to working with the broadcast industry to identify an optimum ATV standard for both media, but we can not foreclose the possibility that cable may be able to provide an ATV service using additional bandwidth capability. As indicated in our initial comments, cable companies increasingly are looking

(Footnote continues on next page)

CONCLUSION

For the foregoing reasons, the Commission should refrain from making spectrum decisions and adopting advanced television standards until objective and subjective testing of the viable ATV systems is completed.

Respectfully submitted,

NATIONAL CABLE TELEVISION ASSOCIATION, INC.

By Wendell H. Bailey/lp
Wendell H. Bailey
Vice President
Science and Technology

By Brenda L. Fox/lp
Brenda L. Fox

By Loretta P. Polk
Loretta P. Polk

By R. Brian James/lp
R. Brian James
Director of Engineering
Science and Technology

ITS ATTORNEYS

1724 Massachusetts Ave., N.W.
Washington, D.C. 20036
(202)775-3664

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(Footnote continued)

to fiber as a means to increase future capacity for new services, including HDTV, and to improve the technical performance of cable systems. In fact, multiple system operators are already installing fiber in some areas and Cable Labs is studying future applications of fiber to the cable business. Thus, while the cable industry will continue to pursue the most spectrum efficient, high performance ATV systems, it also will be looking to maximize its technological capabilities in order to better serve its subscribers.